

RJR

Preface

This pamphlet and the presentation of the ancillary materials pertaining to this subject represent a review of the types of information researchers need for developing mentholated cigarettes.

SECRET

No. 257 By

Hundreds of articles have been written on the topics included in this pamphlet. Most of these articles have been referenced in the various sections of this monograph. The materials for the pamphlet and handouts have been collected from several sources including: in-house RJR Report Memorandum and Formal Reports, Interoffice Memos, several text books and reference materials (available in our Library), the U.S. Patent Gazette, CORESTA Bulletins, reports furnished by our suppliers (e.g., Haarmann and Reimer, Celanese, Dragoco, and Eastman), pamphlets from Philip Morris, journal articles, and reports furnished by the Tobacco Institute and the Tobacco Merchants' Association.

The pamphlet is far from exhaustive but it represents a particular selection of material which, in my view and according to my experience, is necessary for a researcher to know in order to effectively design mentholated cigarettes. The subjects covered in this pamphlet can be divided into two sections. The first section deals with menthol and looks at the origins of this flavorant, its chemistry, its biological consequences (toxicology, physiological effects, pharmacology, etc.) and its uses in many industries, particularly the cigarette industry. This section is comprised of the first five modules:

- o Menthol and Mint Flavor Additives - General History and Applications
- o Stereochemistry and Synthesis of Menthol
- o Physiological Effects of Menthol
- o Toxicology and Biological Properties of Menthol
- o History of Mentholated Cigarettes

The second sections deals with the design of mentholated cigarettes. The topics discussed in this section comprise the sixth module and are as follows:

- o Review of Factors Affecting Menthol Migration and Smoke Menthol Transfer (1963-1983)
- o Manufacturing/Analytical Techniques/Quality Assurance of Mentholated Cigarettes
- o Critical Variables in the Design of Mentholated Cigarettes
- o Menthol Perception
- o Smoke Studies of Mentholated Cigarettes.

While preparing the pamphlet, I enjoyed the assistance and cooperation of many people whose work I would like to acknowledge. Ms. M.R. Savoca and Mr. J.D. Phillips provided a great deal of support for the completion of this task in terms of moral support, funds for the preparation of the audio-visual presentation, and personnel for typing the pamphlet. I would like to thank Mr. Ron Williard and Mr. Bobby Hardin for suggesting the project and Ms. Pamela Mitchell, Ms. Jean Freeman, Ms. Teresa Lyalls, and Ms. Vicky Hicks for typing the manuscript. Ms. Tammy Greene deserves a special commendation for reviewing the manuscript and patiently making suggestions for corrections and rewrites to this oftentimes disgruntled dilettante author. To my colleague, Mr. Alan Norman, I owe thanks for reading the text and for helping me to prepare the materials for several of the lectures on the subject matter. A

5168 9260

PM3006574721

very special thanks is due my wife, Patricia, for her patience and for the encouragement she has always given me in every task I have undertaken.

Finally, I would like to express my appreciation for the excellent graphic and photographic work furnished by the RJR Graphics Communications. Art, and Photo Departments, and especially to Ms. Lisa R. Drum for her cooperation and coordination of the work.

December 20, 1984

T. A. Perfetti

5168 9261

PM3006574722

MENTHOL AND THE DESIGN OF MENTHOLATED CIGARETTES COURSE
Module 6. Design of Menthol Cigarettes

Outline

I. Introduction of Topics for Discussion

A. Review of Factors Affecting Menthol Migration and Smoke Menthol Transfer (1963-1983).

1. Menthol Migration from Mentholated Filters or Mentholated Tobacco
2. Parameters Affecting Smoke Menthol Delivery
3. Conclusions
4. Bibliography

B. Manufacturing /Analytical Techniques/Quality Assurance of Mentholated Cigarettes

1. Use and Control of Menthol in Cigarette Products
2. The Application of Menthol
3. Analytical Methodology
 - o Tobacco and Cigarette Components
 - o Menthol in Cigarette Smoke
 - o Menthol in Packaging Materials
4. Quality Assurance
5. Bibliography

C. Critical Variables in the Design of Mentholated Cigarettes

1. Background
2. Variables Which Affect Menthol Delivery and Migration
 - o Menthol Parameter Screening Study
 - o Results and Discussion
 - o Conclusions of Menthol Parameter Screening Study
3. Effects of Cigarette Construction Parameters and Menthol Load on Menthol Cigarette Performance
 - o Menthol Parameter Study
 - o Results and Discussion
 - o Conclusions of Menthol Parameter Study
4. Bibliography

D. Menthol Perception

5168 9262

PM3006574723

1. Introduction of Topics for Discussion
2. Background
3. Perception Studies of Mentholated Cigarettes Based on the Attribute of Menthol Taste
 - o FFLT-M Cigarettes
 - o FF-M Cigarettes
 - o ULT-M Cigarettes
 - o Recommended Brand Specifications for Mentholated Products Based on the Attribute of Menthol Taste
 - o Other Variables Affecting Menthol Taste Perception
 - o Examination of Subliminal Levels of Menthol Delivery on Taste Perception
 - o Summary of Results on Perception Studies of Mentholated Products Based on the Attribute of Menthol Taste
4. Perception Studies of Mentholated Cigarettes Based on the Attribute of Menthol Cooling
 - o Just Noticeable Difference (JND) Studies of Mentholated Products
 - o Summary of Menthol JND Studies

E. Smoke Studies of Mentholated Cigarettes

1. Introduction of Topics for Discussion
2. Review of Work on the Fate of Menthol During Smoking
3. Summary
4. Bibliography

51168 9263

PM3006574724